CLAIMS

What is claimed is:

1. A device for measuring light from a source *in situ*, the device comprising:

a photometer including a detector; and

a collector for engaging with the photometer such that light from the source is incident on the detector, the collector including:

a hood for engaging the source such that ambient light is prevented from entering the hood; and

optics disposed within the hood for directing light from the source onto the detector.

2. The measuring device of claim 1 wherein the optics include an optical diffuser disposed within the hood such that light incident on the detector first passes through the optical diffuser.

3. The measuring device of claim 2 wherein the optical diffuser scatters the light from the source.

4. The measuring device of claim 2 wherein the optical diffuser includes a plate of translucent material.

5. The measuring device of claim 2 wherein the optical diffuser is substantially planar.

6. The measuring device of claim 2 wherein the optical diffuser is curvilinear.

7. The measuring device of claim 2 wherein the optical diffuser includes a plate and a diffusion pattern disposed on one side of the plated.

8. The measuring device of claim 1 wherein the optics include a reflective coating disposed on an inside surface of the hood.

9. The measuring device of claim 1 wherein the device measures intensity of light from a plurality of sources each having a configuration, at least one of the sources having a configuration that is different from that of the other sources, further comprising:

a plurality of collectors each having a hood that is configured to complement the configuration of one of the sources.

10. The measuring device of claim 9 wherein each of the collectors is engageable with the photometer.

11. The measuring device of claim 9 wherein the plurality of sources includes a first and a second traffic signal each having a different configuration;

one of the collectors having a hood that is configured to engage with the first traffic signal; and

one of the collectors having a hood that is configured to engage with the second traffic signal;

12. The measuring device of claim 1 wherein the detector provides an output indicative of at least one parameter of the light.

13. The measuring device of claim 12 wherein the output is indicative of intensity.

14. The measuring device of claim 12 wherein the photometer further includes a display for displaying an indication of the parameter of the light responsive to the output of the detector.

15. The measuring device of claim 1 wherein the photometer further includes a calibration circuit for selectively providing a plurality of calibration signals each corresponding to light from one of a plurality of sources.

16. The measuring device of claim 15 wherein the plurality of sources includes a traffic signal.

17. The measuring device of claim 16 wherein the traffic signal includes parameters of color, size, and shape.

18. The measuring device of claim 17 wherein the photometer further includes a display for displaying an indication of whether the intensity of the light of the traffic signal meets a threshold.

19. The measuring device of claim 17 wherein the photometer further includes a display for displaying an indication of the intensity of the light of the traffic signal.

20. The measuring device of claim 1 wherein the photometer further includes a circuit for estimating when the intensity of the light from the source falls below a threshold.

21. The measuring device of claim 1 wherein the photometer further includes a circuit for wirelessly transmitting data to a remote unit.

22. The measuring device of claim 21 further comprising the remote unit.

23. The measuring device of claim 1 further comprising a temperature sensor in communication with the photometer for measuring temperature of the source.

24. A method for measuring intensity of light from a source, the method comprising:

providing a measuring device including:

a photometer with a detector; and

a collector for engaging with the photometer and including:

a hood for engaging the source such that ambient light is prevented from entering the hood; and

optics disposed within the hood for directing light from the source onto the detector;

positioning the hood on the source; and

actuating the photometer.

25. The method of claim 24 wherein the collector is releasably engageable with the photometer, the method further comprising removing the collector from the photometer.

26. The method of claim 24 further comprising:

providing a second collector; and

replacing the collector engaged with the photometer with the second collector.

27. The method of claim 24 wherein there are a plurality of sources each having a different configuration, the method further comprising:

providing a plurality of collectors each including a hood that is configured to engage with a respective one of the sources so that ambient light is prevented from entering the hood.

28. The method of claim 27 further comprising:

selecting the collector that corresponds to the source to be measured; and

engaging the selected collector with the photometer.

29. The method of claim 27 wherein each of the sources emits light with a respective set of parameters, the method further comprising:

calibrating the photometer to be responsive to the light from the source being measured.

30. The method of claim 24 wherein the source is a traffic signal and the positioning step comprises:

positioning the hood on the traffic signal so that light emanating therefrom enters the hood.

31. A method for measuring intensity of light from a source, the method comprising:

receiving only light from the source;

diffusing the received light; and

detecting the diffused light.

32. The method of claim 31 further comprising generating a signal indicative of the detected light.

33. The method of claim 32 further comprising processing the signal.

34. The method of claim 33 further comprising generating an output responsive to the processed signal.

35. The method of claim 33 wherein the output is indicative of a parameter of the received light.

36. The method of claim 33 wherein the processing step determines intensity of the received light.

37. The method of claim 36 wherein the intensity of the light from the source degrades over time, the method further comprising estimating when the intensity will fall below a threshold.

38. The method of claim 31 wherein there are a plurality of sources each emitting light with a respective set of parameters, the method further comprising:

generating a signal indicative of at least one parameter of the received light.

39. The method of claim 38 wherein the signal is generated by a converter circuit, the method further comprising:

calibrating the converter circuit to be responsive to the light from the source being measured.

40. A device for measuring intensity of light from a plurality of traffic signals, each of the traffic signals having a respective configuration and including an LED array, the device measuring intensity without having the LED array removed from the traffic signal being measured, the device comprising:

a photometer including:

a detector for generating a signal indicative of the intensity of the light from the traffic signal;

circuitry connected for processing the signal from the detector; and

an output for displaying a signal responsive to the processed signal; and

a plurality of collectors each being releasably engageable with the photometer, each of the collectors including:

a hood having a configuration for engaging with a respective one of the traffic signals such that ambient light is prevented from entering the hood and all of the light emitted by the LED array enters the hood; and

optics disposed within the hood for directing light from the LED array of the traffic signal being measured onto the detector, the optics including:

a translucent optical diffuser disposed within the hood such that light incident on the detector first passes through the optical diffuser; and

a reflective layer disposed on an inside surface of the hood for reflecting light incident thereon.

41. The measuring device of claim 40 wherein the light emitted by each of the traffic signals has a respective set of parameters;

the circuitry for generating a signal indicative of at least one of parameters of the light from the traffic signal being measured.

42. The measuring device of claim 40 wherein the circuitry of the photometer includes:

a converter circuit connected to the detector for converting an analog signal from the detector to a digital signal for further processing; and

a calibration circuit for selectively providing a plurality of calibration signals to the converter circuit so that the converter circuit is responsive to light from the traffic signal being measured.

43. The measuring device of claim 40 wherein the circuitry of the photometer determines when the intensity of the light from the traffic signal being measured will fall below a threshold.